

## AMENDMENT TO THE CLAIMS

### Claims 1-15 (Cancelled)

95 16. (New) A laser diode drive circuit comprising;  
a laser diode operable to emit light based on a current;  
an adjustment circuit operable to generate a first voltage according to an amount of light emitted by said laser diode and to store a first voltage value based on the first voltage; and  
a temperature compensation circuit operable to generate a second voltage according to an ambient temperature, to generate a third voltage based on the first and second voltages and to adjust the current based on the third voltage.

17. (New) A laser diode drive circuit according to claim 16, further comprising a control device operable to regularly update the first voltage value stored in said adjustment circuit.

18. (New) A laser diode drive circuit according to claim 16, wherein said temperature compensation circuit is further operable to compensate for degradation of said laser diode by changing a modulation current flowing through said laser diode so as to match the level of the light output power from said laser diode with the first voltage value stored in said adjustment circuit.

19. (New) A laser diode drive circuit according to claim 18, wherein said temperature compensation circuit is further operable to regularly update the first voltage value having been stored in said adjustment circuit.

20. (New) A laser diode drive circuit comprising;  
a laser diode operable to emit light based on a current;  
an adjustment circuit comprising a bottom detection circuit operable to detect a bottom

voltage of a first voltage generated based on an amount of light emitted by said laser diode and a peak detection circuit operable to detect a peak voltage of the first voltage, said adjustment circuit being operable to generate a second voltage based on a difference between the bottom voltage and the peak voltage; and

a temperature compensation circuit, operable to generate a third voltage based on an ambient temperature, to generate a fourth voltage based on the second and third voltages and to adjust the current based on the third voltage.

21. (New) A laser diode drive circuit according to claim 20, further comprising:  
a memory operable to store a first voltage value based on the first voltage,  
wherein said temperature compensation circuit is further operable to regularly update the first voltage value stored in said memory.

22. (New) A laser diode drive circuit according to claim 20, further comprising:  
a memory operable to store a first voltage value based on the first voltage,  
wherein said temperature compensation circuit is operable to compensate for degradation of  
said laser diode by changing a modulation current flowing through said laser diode so as to match the  
level of the light output power from said laser diode based on the first voltage value stored in said  
memory.

23. (New) A laser diode drive circuit according to claim 22, wherein said temperature compensation circuit is further operable to regularly update the first voltage value stored in said memory.

24. (New) A laser diode drive circuit according to claim 22, wherein said temperature compensation circuit is further operable to compensate for a change in an extinction ratio of said laser diode by changing a DC bias current flowing through said laser diode so as to match the level of the

light output power from said laser diode with the first voltage value stored in said memory.

25. (New) A laser diode drive circuit according to claim 24, wherein said temperature compensation circuit is further operable to regularly update the first voltage value stored in said memory.

26. (New) The laser diode drive circuit according to claim 20, wherein said adjustment circuit is further operable to generate a fifth voltage based on an output of said bottom detection circuit, to generate a sixth voltage based on the third and fifth voltages and to adjust the current based on the sixth voltage.

27. (New) An optical transmission system comprising;

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a laser diode drive circuit comprising a laser diode operable to emit light based on a current, an adjustment circuit operable to generate a first voltage according to an amount of light emitted by said laser diode and to store a first voltage value based on the first voltage and a temperature compensation circuit operable to generate a second voltage according to an ambient temperature to generate a third voltage based on the first and second voltages and to adjust the current based on the third voltage; and

a control device operable to control said laser diode drive circuit and to regularly update the first voltage value stored in said adjustment circuit.

28. (New) An optical transmission system according to claim 27, wherein said temperature compensation circuit is further operable to compensate for degradation of said laser diode by changing a modulation current flowing through said laser diode so as to match the level of the light output power from said laser diode with the first voltage value stored in said adjustment circuit.

29. (New) An optical transmission system comprising;

a laser diode drive circuit comprising a laser diode operable to emit light based on a current, an adjustment circuit comprising a bottom detection circuit operable to detect a bottom voltage of a first voltage generated based on an amount of light emitted by said laser diode and a peak detection circuit operable to detect a peak voltage of the first voltage, said adjustment circuit being operable to generate a second voltage based on a difference between the bottom voltage and the peak voltage and a temperature compensation circuit, operable to generate a third voltage based on an ambient temperature, to generate a fourth voltage based on the second and third voltages and to adjust the current based on the third voltage; and

a control device operable to control said laser diode drive circuit to regularly update a first voltage value based on the first voltage in a data storage unit.

30. (New) An optical transmission system according to claim 29, further comprising:

a memory operable to store a first voltage value based on the first voltage, wherein said temperature compensation circuit is operable to compensate for degradation of said laser diode by changing a modulation current flowing through said laser diode so as to match the level of the light output power from said laser diode based on the first voltage value stored in said memory.

31. (New) An optical transmission system according to claim 29, further comprising:

a memory operable to store a first voltage value based on the first voltage, wherein said temperature compensation circuit is further operable to compensate for a change in an extinction ratio of said laser diode by changing a DC bias current flowing through said laser diode so as to match the level of the light output power from said laser diode with the first voltage value stored in said memory.